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Picatinny Arsenal
24 January 1945

TECHNICAL REPORT NO. 1493

Action of Explosives on Metals Used in Ammunition.

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SYNOPSIS

The fourth and final examination has been made of the metal strips of copper, brass, aluminum, stainless steel, mild steel, mild steel coated with acid-proof black paint and mild steel plated with copper, cadmium, nickel and zinc after storage for two years at atmospheric temperature and 50°C. in contact with the explosives PETN, 50/50 Pentolite, Haleite, 60/40 Ednatol, 75/25 Tetrytol and RDX Compositions A and B, both dry and containing approximately 0.5 percent moisture.

After two years of continuous storage, the dry explosives had little or no effect on any of the metals. The action of the moist explosives on these same metals varied from a light to a heavy tarnishing effect with the exception of moist Haleite and 60/40 Ednatol, which had a decidedly heavier corrosive action on all metals except stainless steel.

While stainless steel and aluminum appear to be the most corrosion-resistant of the metals considered in this series of tests, it is considered that all the other metals similarly tested in this series are satisfactory for use in ammunition with respect to this characteristic, provided there is no increase in the maximum moisture content as allowed by the present specifications for the explosives studied.

This report also contains the results of similar tests made using magnesium metal and a magnesium-aluminum alloy, J-1. In addition to the explosives listed above, these metals were stored in contact with TNT, 50/50 Amatol, Lead Azide and Black Powder. Observations at the end of eighteen months storage indicate, as with the other metals, that the dry explosives, except 50/50 Amatol, had little effect on these two metals, while the moist explosives had effects ranging from a light tarnishing to a heavy corrosive action. Dry Amatol had a decided corrosive action on both of these metals.

It is considered that both magnesium and the magnesium-aluminum alloy, J-1, are also satisfactory for use in ammunition components with all the explosives tested ~~in this study~~ except Amatol.

Action of Explosives on metals Used in Ammunition.

INTRODUCTION:

1. Tests have been continued to determine the action of a group of seven relatively new high explosives, which have been standardized for military use, on ten different metals and plated metals commonly used in the manufacture of ammunition. These metals were examined after six, twelve and eighteen months of storage under different conditions and the observations made at those times were given in previous reports (Ref. A, B, C). This report gives the results of the fourth series of observations, made after two years of storage. This is the final series and completes the work under this program.

2. Subsequent to the initiation of the above series of tests, it was requested (Ref. D) that similar tests be made using magnesium metal and a magnesium-aluminum alloy, J-1, supplied by the Ordnance Office. These two metals were stored in contact with TNT, 50/50 Amatol, Lead Azide and Black Powder, in addition to the seven explosives referred to above. This report gives the observations made of these two metals after storage for eighteen months.

OBJECT:

3. To determine the corrosive action of seven different explosives, both dry and containing approximately 0.5 percent moisture, on ten different metals and plated metals after storage for two years at both atmospheric temperature and 50°C.

4. To determine the corrosive action of eleven different explosives on magnesium metal and a magnesium-aluminum alloy, J-1, when stored under similar conditions for eighteen months.

RESULTS:

5. The results of observations of the condition of the metals after storage for two years in contact with both dry and moist explosives are given in detail in Tables I-IV. These may be summarized as follows:

- a. Dry PETN, Haleite and 75/25 Tetrytol showed no action on any of the metals, either at atmospheric temperature or 50°C.
- b. Dry 60/40 Ednatol and RDX Compositions A and B, at both atmospheric temperature and 50°C., had a slight tarnishing action on some of the metals. Dry 50/50 Pentolite appeared to have a slight tarnishing action only on zinc plated steel at 50°C.
- c. Moist PETN, 50/50 Pentolite, 75/25 Tetrytol and RDX Compositions A and B all affected some of the metals slightly.
- d. Moist Haleite and 60/40 Ednatol had no action on stainless steel or aluminum at atmospheric temperature or on stainless steel at 50°C., while at the higher temperature, the aluminum strips in contact with these two explosives had a very few scattered spots of corrosion. The tests of the action of these two explosives when moist on the other metals used in this study were discontinued at the end of one year of storage because of the definite, heavy corrosion.
- e. Stainless steel resisted the action of all the explosives under all

conditions. Aluminum appears to be the next best corrosion-resistant metal.

6. The results of eighteen months storage of magnesium and magnesium-aluminum alloy with different explosives are given in Tables V-VIII. These may be summarized as follows:

a. Dry Haleite, 60/40 Ednatol and RDX Composition A had only a very slight tarnishing action on magnesium, while dry 50/50 Amatol had a considerably greater corrosive action on this metal. The remaining dry explosives had no affect, either at atmospheric temperature or 50°C.

b. Dry Haleite, TNT, RDX Composition A, 60/40 Ednatol and 75/25 Tetrytol all had a slight tarnishing effect on the magnesium-aluminum alloy. As in the case of magnesium, dry 50/50 Amatol showed a decidedly heavy action on the alloy. The remaining dry explosives had no effect on this metal, either at atmospheric temperature or 50°C.

c. Both metals were affected to some extent by all the moist explosives except lead azide, which had no affect on the magnesium-aluminum alloy.

DISCUSSION OF RESULTS:

7. The observations made of the metals after two years of storage are given in Tables I-IV. The results of all previous observations are also included in these tables. The data given in Tables I and II would indicate that the dry explosives used in this study had little if any effect on any of the metals used. Such action by the dry explosives as has been noted was only a tarnishing affect.

8. The data given in Tables III and IV indicate that these same metals, except stainless steel, aluminum, and mild steel, coated with acid-proof black paint were more affected by the moist explosives. With the exception of moist Haleite and 60/40 Ednatol, this action was generally an increase in tarnishing action. A number of cases, which have been noted in the footnotes of the tables, were found in which a small amount of spotted corrosion appeared above the level of the explosive as well as where the explosive had been in contact with the metal. It is believed that a considerable degree of this type of corrosion was the result of the moisture alone which was originally contained in the explosives. Controlled laboratory tests at elevated temperature, in which each of the metals was partly immersed in a test tube containing distilled water showed that this spotted corrosion would occur due to the moist atmosphere. This was not true in the cases of moist Haleite and 60/40 Ednatol, both of which had a very heavy corrosive action on most of the metals tested, as shown in Tables III and IV. However, it should be noted that Haleite is a non-hygroscopic material, and if dried as prescribed for loading into fuze or shell components, should have no corrosive action on any metal used. In addition to the results reported here, it has been shown that the stability of dry Haleite was not affected and no corrosion occurred after the explosive was stored for one year at 50°C. in pressed condition in copper and aluminum detonator cups (Ref. C), and when stored loose in contact with steel, brass and aluminum for two and one-half years at 50°C. (Ref. E).

9. The present specifications for the explosives used in this study allow a maximum moisture content of 0.10-0.15 percent, depending upon the explosive. It is indicated by these tests that no corrosion difficulties should be encountered with the explosives and metals listed in Tables I to IV as long as the moisture content at the time of loading is kept below the maximum allowable.

10. The data given in Tables V-VIII likewise show that the dry explosives, with the exception of 50/50 Amatol, have had little or no action on the magnesium or magnesium-aluminum alloy. However, moist Haleite, 60/40 Ednatol, 50/50 Amatol and TNT have had a definite, heavy corrosive action on both of these metals. In several cases using moist explosives, spotted corrosion was noted on that part of the magnesium strip not in direct contact with the explosive. This may partially be due to the moisture only, since a strip of magnesium partly immersed in distilled water and stored at an elevated temperature became blackened. Both of these metals appear to be less corrosion-resistant than any of the metals given in Tables I-IV. Aluminum, in particular is far superior in this respect to either magnesium or the magnesium-aluminum alloy. Inasmuch as there has been no significant change in the condition of these metals during the last year of storage, continuation of this series of tests is unnecessary.

CONCLUSIONS:

11. Two year storage tests indicate that (1) the explosives tested, when in a dry state, have little or no effect on any of the metals used in this series of tests, and (2) the same explosives containing 0.50 percent moisture have slightly greater effects, this being particularly marked in the cases of Haleite and Ednatol.

12. Eighteen months storage tests of magnesium and a magnesium-aluminum alloy indicate that (1) the dry explosives used in this particular series, with the exception of Amatol, have little effect, if any on these two metals and (2) the same explosives containing 0.50 percent moisture have a somewhat greater effect, this being especially marked in the cases of TNT, Amatol, Haleite and Ednatol. However, from the data it is apparent that the magnesium and magnesium-aluminum alloy are more susceptible to the action of moist explosives than the other metals tested.

13. Aluminum and stainless steel are the most corrosion-resistant of the metals tested.

RECOMMENDATIONS:

14. It is recommended that all the metals which have been in storage for two years be considered satisfactory for use in ammunition with the explosives tested, provided there is no increase in the maximum allowable moisture content as now specified for these explosives.

15. Subject to the same condition, it is recommended that magnesium and the magnesium-aluminum alloy, J-1, be considered satisfactory for use in ammunition with the explosives tested except Amatol.

[redacted]

EXPERIMENTAL PROCEDURE:

14. The procedure for the storage of the metals referred to in Tables I-VIII has already been reported.

REFERENCES:

A. Picatinny Arsenal Technical Report No. 1325.
B. Picatinny Arsenal Technical Report No. 1358.
C. Picatinny Arsenal Technical Report No. 1451.
D. OO 400.112/3733; PA 471/1496-305.
E. Picatinny Arsenal Technical Report No. 1395.

[redacted]

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Key to Symbols Used in Recording Observations

VS = very slight corrosion, indicated by a light tarnishing of the metal only.
S = slight corrosion, indicated by a heavy tarnishing of the metal, and may be accompanied by one or two small spots of rust or other indications of showing signs of deeper action.
C = considerable corrosion, indicated by pitting or rusting to an appreciable extent.
H = heavy corrosion.
VH = very heavy corrosion.

A blank space indicates no action.

[redacted]

Table I

Action of Dry Explosives on Metals after Storage for Two Years at Atmospheric Temperature.

	PETN				Haleite				60/40 Ednatol				75/25 Tetrytol				50/50 Pentolite				RDX Composition "A"				RDX Composition "B"			
	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.
Copper	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-	-	-	-	-	-	-	-	-	VS	VS	VS	VS
Brass	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-	-	-	-	-	VS	VS	VS	VS	VS	VS	VS	VS
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, mild	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-
Steel, copper plated	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, nickel plated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, zinc plated	-	-	-	-	-	-	-	-	VS[1]	VS[1]	VS[1]	VS[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	VS	VS
Steel, acid-proof black paint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Denotes a change in color of that portion of the metal above the level of the explosive.

[redacted]

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Table II

Action of DPX Explosives on Metals after Storage for Two Years at 50°C.

	TNT				Haleite				40/60 Ednatol				75/25 Tetrytol			
	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.
Copper	-	-	-	-	-	-	-	-	-	-	-	VS	-	-	-	-
Brass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, mild	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, copper plated	-	-	-	-	-	-	-	-	VS	VS	VS	VS	-	-	-	-
Steel, nickel plated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, zinc plated	-	-	-	-	-	-	-	-	VS[1]	VS[1]	VS[1]	VS[1]	-	-	-	-
Steel, acid-proof black paint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	50/50 Pentolite				RDX Composition "A"				RDX Composition "B"			
	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.	6 mos.	12 mos.	18 mos.	24 mos.
Copper	-	-	-	-	VS	VS	S[2]	S[2]	VS	VS	S	S
Brass	-	-	-	-	VS	VS	S[2]	S[2]	S	S	VS	S
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-
Steel, mild	-	-	-	-	-	-	-	-	-	-	-	-
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	-	-	-	-	VS	S	VS	VS	-	-	S	S
Steel, copper plated	-	-	-	-	VS	VS	VS	VS	VS	S	VS	S
Steel, nickel plated	-	-	-	-	-	-	-	-	-	-	-	-
Steel, zinc plated	VS	VS	VS	VS	-	-	-	-	-	-	-	-
Steel, acid-proof black paint	-	-	-	-	-	-	-	-	-	-	-	-

1. Denotes change in color of that portion of the metal above the surface of the explosive.

2. Denotes slight tarnishing only; no corrosion or pitting of the metal.

[redacted]

[redacted]

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Table III

Action of Moist Explosives on Metals after Storage for Two Years at Atmospheric Temperature.

	PETN 6 mos.	PETN 12 mos.	PETN 18 mos.	PETN 24 mos.	Haleite 6 mos.	Haleite 12 mos.	Haleite 18 mos.	Haleite 24 mos.	50/50 Ednatol 6 mos.	50/50 Ednatol 12 mos.	50/50 Ednatol 18 mos.	50/50 Ednatol 24 mos.
Copper	-	-	-	-	C	C	[4]	[4]	C	C	[4]	[4]
Brass	VS	VS	VS	VS	C	C	[4]	[4]	C	C	[4]	[4]
Aluminum	-	-	VS[1]	VS[1]	-	-	-	-	-	-	-	-
Steel, mild	-	-	VS[1]	VS[1]	TH	TH	[4]	[4]	TH	TH	[4]	[4]
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	VS	VS	VS	VS	TH	TH	[4]	[4]	C	C	[4]	[4]
Steel, copper plated	-	-	-	-	TH	TH	[4]	[4]	C	C	[4]	[4]
Steel, nickel plated	-	-	VS[2]	VS[1]	TH	TH	[4]	[4]	C	C	[4]	[4]
Steel, zinc plated	VS	VS	VS	VS	TH[1]	TH[1]	[4]	[4]	H[1]	H[1]	[4]	[4]
Steel, acid-proof black paint	-	-	-	-	C	C	H	H	-	-	-	-

	75/25 Tetrytol 6 mos.	75/25 Tetrytol 12 mos.	75/25 Tetrytol 18 mos.	75/25 Tetrytol 24 mos.	50/50 Pentolite 6 mos.	50/50 Pentolite 12 mos.	50/50 Pentolite 18 mos.	50/50 Pentolite 24 mos.	Composition "A" 6 mos.	Composition "A" 12 mos.	Composition "A" 18 mos.	Composition "A" 24 mos.	RDX Composition "B" 6 mos.	RDX Composition "B" 12 mos.	RDX Composition "B" 18 mos.	RDX Composition "B" 24 mos.
Copper	S[1]	S[1]	S[1]	S[1]	VS	VS	VS	VS	S[2]	S[2]	S[2]	S[2]	S[2]	S[2]	S[2]	S[2]
Brass	VS	VS	VS	VS	VS	VS	VS[1]	VS[1]	S[2]	S[2]	S[2]	S[2]	VS	VS	S[2]	S[2]
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, mild	-	-	VS[1]	VS[1]	-	-	-	-	S[1]	S[1]	S[1]	S[2]	-	-	VS[1]	VS[1]
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	VS	VS	VS	VS	-	-	-	-	-	-	-	-	VS	VS	VS[1,2]	VS[1,2]
Steel, copper plated	VS	VS	VS	VS	VS	VS	VS	VS	S[2]	S[2]	S[2]	S[2]	VS	VS	S[2]	S[2]
Steel, nickel plated	-	-	VS[2]	VS[1]	-	-	-	-	-	-	VS[1]	VS[1]	-	-	VS[1]	VS[1]
Steel, zinc plated	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]	S[1,2]
Steel, acid-proof black paint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The following are to be used in addition to the general classifications given under "Key to Symbols":

1. Denotes change in color of metal above level of explosive.
2. Denotes a heavy tarnishing but no actual corrosion or pitting of the metal.
3. Denotes a few corrosive spots over entire surface of metal; no tarnishing anywhere.
4. Tests discontinued after one year of storage.
5. Denotes a few corrosive spots only where in contact with explosive; no tarnishing of any part of metal.

[redacted]

[redacted]

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Table IV

Action of Moist Explosives on Metals after Storage for Two Years at 50°C.

	PETN				Haleite				40/40 Ednatol			
	6 mo.	12 mo.	18 mo.	24 mo.	6 mo.	12 mo.	18 mo.	24 mo.	6 mo.	12 mo.	18 mo.	24 mo.
Copper	-	-	VS	VS	VH	VH	[4]	[4]	C	C	[4]	[4]
Brass	VS	VS	S	S	H	H	[4]	[4]	C	C	[4]	[4]
Aluminum	-	-	-	vsl	-	-	-	vsl	-	-	-	vsl
Steel, mild	-	vsl	vsl	vsl	VH	VH	[4]	[4]	VS	VH	[4]	[4]
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	VS	VS	sl	sl	VH	VH	[4]	[4]	H	H	[4]	[4]
Steel, copper plated	-	-	vsl	vsl	VH	VS	[4]	[4]	C	C	[4]	[4]
Steel, nickel plated	-	-	vsl	vsl	VH	VH	[4]	[4]	C	C	[4]	[4]
Steel, zinc plated	vsl	sl	sl[1,2]	sl[1,2]	VH	VS	[4]	[4]	C	C	[4]	[4]
Steel, acid-proof black paint	-	-	VS	vsl[6]	C	C	C	H	C	C	C	C

	75/25 Tetrytol				50/50 Pentolite				RDX Composition "A"				RDX Composition "B"			
	6 mo.	12 mo.	18 mo.	24 mo.	6 mo.	12 mo.	18 mo.	24 mo.	6 mo.	12 mo.	18 mo.	24 mo.	6 mo.	12 mo.	18 mo.	24 mo.
Copper	sl	sl	sl	sl	VS	VS	sl	sl	sl	sl	sl	sl	sl	sl	sl	sl
Brass	sl	sl	sl	sl	VS	VS	sl	sl	sl	sl	sl	sl	VS	VS	VS	VS
Aluminum	VS	VS	vsl	vsl	-	-	-	-	-	-	vsl	vsl	-	-	-	-
Steel, mild	VS	VS	vsl	VS	-	-	vsl	vsl	sl	sl	sl	sl	-	-	vsl	vsl
Steel, stainless	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel, cadmium plated	[illegible]	sl	sl	sl	-	-	sl[1,2]	sl[1,2]	VS	VS	VS	VS	VS	VS	VS	VS
Steel, copper plated	VS	VS	sl	sl	VS	VS	sl	sl	sl	sl	sl	sl	sl	sl	sl	sl
Steel, nickel plated	VS	VS	vsl	vsl	-	-	vsl	vsl	VS	S	S	sl	-	-	vsl	sl
Steel, zinc plated	cl	sl	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]	sl[1,2]
Steel, acid-proof black paint	-	-	-	-	-	-	-	-	-	VS	VS	vsl[6]	VS	VS	VS	vsl[6]

1. Denotes a change in color of metal above level of explosive.
2. Denotes a heavy tarnishing only, but no actual corrosion or pitting of metal.
3. Denotes a few scattered, small rust spots over entire surface of metal, no tarnishing.
4. Tests discontinued after one year of storage.
5. Denotes a few corrosive spots only where in contact with explosive; no tarnishing on any part of metal.
6. Definite roughening of surface of paint layer.

[redacted]

[redacted]

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Table V

Action of Dry Explosives on Magnesium Metal.

	Atmospheric Temperature					50°C.				
	One Month	Three Months	Six Months	Twelve Months	Eighteen Months	One Month	Three Months	Six Months	Twelve Months	Eighteen Months
PETN	-	-	-	-	-	-	-	-	-	-
Haleite	-	-	VS	VS	VS	VS	VS	VS	VS	VS
TNT	-	-	-	-	-	-	-	-	-	-
RDX Composition A	-	-	-	VS	VS	-	-	VS	VS	VS
RDX Composition B	-	-	-	-	-	-	-	-	-	-
50/50 Amatol	S[1]	S[1]	S[1]	S[1]	S[1]	S[1]	H[1]	H[1]	H[1]	H[1]
50/50 Pentolite	-	-	-	-	-	-	-	-	-	-
60/40 Ednatol	-	-	VS	VS	VS	VS	[illegible]	VS	VS	VS
75/25 Tetrytol	-	-	-	-	-	-	-	-	-	-
Black Powder	-	-	-	-	-	-	-	-	-	-
Lead Azide	-	-	-	-	-	-	-	-	-	-

1. Brownish crystalline growth on metal; Amatol a dark brown in color.

[redacted]

[redacted]

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Table VI

Action of Dry Explosives on Magnesium-Aluminum Alloy, J-1.

	Atmospheric Temperature					50°C.				
	One Month	Three Months	Six Months	Twelve Months	Eighteen Months	One Month	Three Months	Six Months	Twelve Months	Eighteen Months
PETN	-	-	-	-	-	-	-	-	-	-
Haleite	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
TNT	-	-	-	-	-	VS	VS	VS	VS	VS
RDX Composition A	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
RDX Composition B	-	-	-	-	-	-	-	-	-	-
50/50 Amatol	c[1]	c[1]	c[1]	c[1]	c[1]	H	H	[illegible]	H	H
50/50 Pentolite	-	-	-	-	-	-	-	-	-	-
60/40 Ednatol	VS	VS	VS	VS	VS	VS	s[2]	s[2]	s[2]	s[2]
75/25 Tetrytol	-	-	-	-	-	VS	VS	VS	VS	VS
Black Powder	-	-	-	-	-	-	-	-	-	-
Lead Azide	-	-	-	-	-	-	-	-	-	-

1. Crystalline growth on metal; amatol-dark brown in color.
2. Denotes heavy tarnishing only.

[redacted]

[redacted]

Table VII

Action of Moist Explosives on Magnesium Metal.

	Atmospheric Temperature					50°C.				
	One Month	Three Months	Six Months	Twelve Months	Eighteen Months	One Month	Three Months	Six Months	Twelve Months	Eighteen Months
PETN	VS	S[1]	S[1]	S[1]	S[1]	VS	S[1]	S[1]	S[1]	S[1]
Haleite	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH
TNT	H	H	H	H	H	H	H	VH	VH	VH
RDX Composition A	S	S	S	H	S[2]	H	H	H	H	H[2]
RDX Composition B	S	S	S	H	S[2]	H	H	H	H	H[2]
50/50 Amatol	H	H	H	H	H	VH	VH	VH	VH	VH
50/50 Pentolite	S	S	S	H	S[2]	H	H	H	H	H[2]
60/40 Ednatol	H	H	H	VH	VH	H	VH	VH	VH	VH
75/25 Tetrytol	S	S	S	H	S[2]	H	H	H	H	H[2]
Black Powder	-	-	-	-	-	-	VS	VS	VS	VS
Lead Azide	-	-	-	-	-	-	VS	VS	VS	VS

1. Denotes heavy tarnishing only.
2. Spots of corrosion over entire surface of metal strip.

[redacted]

[redacted]

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Table VIII

Action of Moist Explosives on Magnesium-Aluminum Alloy, J-1.

	Atmospheric Temperature					50°C.				
	One Month	Three Months	Six Months	Twelve Months	Eighteen Months	One Month	Three Months	Six Months	Twelve Months	Eighteen Months
PETN	VS	S[1]	S[1]	S[1]	S[1]	S[1]	S[1]	S[1]	S[1]	S[1]
Haleite	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH
TNT	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH
RDX Composition A	-	VS	VS	VS	VS	C	C	C	C[1]	C[1]
RDX Composition B	S	S[1]	S[1]	S[1]	S[1]	C[1]	C[1]	C[1]	C[1]	C[1]
50/50 Amatol	VH	VH	VH	VH	VH	VH	VH	VH	VH	VH
50/50 Pentolite	VS	VS	VS	VS	VS	H	H	H	H[1]	H[1]
60/40 Ednatol	H	H	H	H	H	H	H	H	H	H
75/25 Tetrytol	VS	S[1]	S[1]	S	S[1]	H	H	H	H	H[1]
Black Powder	-	-	-	VS	VS	VS	VS	VS	VS	VS
Lead Azide	-	-	-	-	-	-	-	-	-	-

1. Denotes heavy tarnishing only.

[redacted]